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PREDICTORS OF INFORMATION RETRIEVAL EFFECTIVENESS AMONG LIBRARY AND INFORMATION SCIENCE UNDERGRADUATES IN KWARA STATE UNIVERSITIES

Adeyinka Tella
Tellayinkaedu@Yahoo.com

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TELLA, Adeyinka
tellayinkaedu@yahoo.com
Research Fellow, Dept. of Information Science, University of South Africa.
Dept. of Library and Information Science, University of Ilorin, Nigeria.

ANYIM, ObinnaAnyim
DEPT. OF LIBRARY AND INFORMATION SCIENCE,
UNIVERSITY OF ILORIN, NIGERIA

MEMUDU, Suleiman Ajala
DEPT. OF INFORMATON COMMUNICATION SCIENCE,
UNIVERSITY IF ILORIN, NIGERIA.

&

OLANIYI, O.T
Librarian,
Federal College of Education, Akoka, Lagos.

ABSTRACT

In this information age, it is observed that, as the quantity of information grows the ability of individuals to search and retrieve the needed information decreases in a dramatically manner, which implies that our information retrieval activitylacks effectiveness. It assumed that some factors should be responsible; however, there is no empirical evidence that predict or determine information retrieval effectiveness. This study examined predictors of information retrieval effectiveness among Library and Information Science (LIS) undergraduate students in universities in Kwara State, Nigeria;considered correlation among the predictors of information retrieval effectiveness, identify the best predictive factor of information retrieval effectiveness, and the problems militating against information retrieval effectiveness.A simple random sampling selection of 160 undergraduate students from two universities represent the sample for the study. Through a survey approach, questionnaire was developed and used for the collection of data. Four research questions were developed to guide the study. The results demonstrated that inter-correlation exist among the independent variables/factors and Information Retrieval Effectiveness;in addition factors such as emotional intelligence, internet self-efficacy, and use of Boolean search operators significantly correlate with and predict information retrieval effectiveness. Similarly, computer self-efficacy has the highest predictive value compare to other

variables while emotional intelligence has the least predictive value of information retrieval effectiveness. Based on the findings, the study recommend that, LIS students should be more Computer self-efficacious so that they can be more effective in their information retrieval activities. It was also suggested that students should engage themselves in self-efficacy and computer training. The experience is assumed will go a long way assisting the students thereby enhance and facilitate their information retrieval activities.
Keywords: Information retrieval, information search, Online information gathering, Computer self-efficacy, Internet self-efficacy, Emotional intelligence, Use of search engines, use of Boolean operators.

Background to the Study

Computer-based Information Retrieval (IR) has been around for at least 40 years, and its origins can be traced back to the late 1940s if not earlier(Fernandez-Luna, Huete, MacFarlane, &Efthimiadis, 2009).Information retrieval *(*IR*)* is the activity of obtaining information resources relevant to an information need from a collection of information resources. Searches *can* be *based* on full-text or other content-*based* indexing. Information Retrieval has been transformed since the revolution of the Internet and the Web. Due to this, information gathering, search and retrieval have entered popular culture and it is now a hot topic discussed in mass media, with widespread interest in the subject shown by the public who engage themselves in the use of IR tools either consciously or unconsciously for a very wide range of tasks, such as work, academic, pleasure, etc. Users of IR fall into two major categories that are non-mutually exclusive: those who develop and evaluate IR systems and services and those who consume them (Juan, 2009). The former are researchers and developers in disciplines such as computing and information sciences, while the latter are everyday users of the technology. Both of these groups have educational needs and competency requirement to engage in search and retrieval activity efficiently.

It has been widely recognized that information retrieval is initiated by information need, which has been described as "vague dissatisfaction" (Taylor, 1968), an "anomalous state of knowledge" (Belkin, 1980), a "gap"(Dervin, 1983), or an "uncertainty" (Kuhlthau, 1991). Such needs for information may arise from what we call '*tasks*searchers' current professional activities, research activities, educational activities, recreational activities, and other personal activities, such as performing a job duty, completing a school assignment, or planning a vacation (Kim, 2009). Thus, information seeking and retrieval has often been characterized as being embedded and characterised with some factors which affect them positively or negatively as such acting directly as predictors of information retrieval determining the success or failure of the search. With the underlying belief that to understand information retrieval, we must understand the major predictors that determines information search and retrieval.

The meaning of the term information retrieval can be very broad. Just getting a credit card out of your wallet so that you can type in the card number is a form of information retrieval. However, as an academic field of study, information retrieval might be defined as finding material (usually documents) of an unstructured nature (usually text) that satisfies information need from within large collections (usually stored on computers) (Cambridge University Press, 2009). Information retrieval used to be an activity that only a few people engaged in: reference librarians, paralegals, and similar professional searchers. Now the world has changed, and hundreds of millions of people engage in information retrieval every day when they use a web search engine or search

their email.Information retrieval is fast becoming the dominant form of information access, overtaking traditional database style of searching.

Just as animals evolve different methods of gathering and hunting food or prey in order to increase their intake of nutrition, humans also adopt different strategies of seeking and retrieving information in order to increase their intake of knowledge (Choo, Detlor& Turnbull, 1998).Foraging for information on the Web and foraging for food share common features as both resources tend to be unevenly distributed in the environment full of uncertainty and risk (Sandstrom 1994).Information retrieval effectiveness which presuppose a timely and easy access to useful and useable information lay directly on some important factors in the framework of information seeking and retrieval interactions. It is also observed that when seeking information, some searchers retrieve relevant information than the other. In the light of this, knowing or determining the predicting factors of search effectiveness is germane. Similarly, current search tools retrieve too many documents of which only a small fraction are relevant to the user query. Furthermore, the most relevant documents do not necessarily appear at the top of the query output order. As a result of these, it is imperative to identify some key variables which are capable of predicting information retrieval effectiveness as it has been pointed out that some users are quick while others slow, some get the required information while others do not during search and retrieval activities.As such, the aim of this study is to investigate the various factors that influence (predict) information retrieval effectiveness.

Statement of the problem

The web serves as a tool that enables users in various parts of the world to electronically publish information which is easily made available to a vast audience. In this information age, it is observed that, as the quantity of information grows the ability of individuals to search and retrieve the needed information decreases in a dramatically manner (Tella, 2011).Information explosion brought about by the development in Information and Communication Technology (ICT) has resulted to various ways of storing and retrieving information which has grown to constitute challenges to undergraduates in their pursuit to accomplishing certain task or assignment through searching of the web and other available information sources in order to retrieve the needed information (Tella, 2011). Studies have been conducted on online information retrieval and information search through observation, survey, experiment and other research design. However, limited studies are available on information retrieval effectiveness particularly among the Library and Information Science undergraduate students whose field is narrowed down to assisting varying degree of users in the information search and retrieval exercise towards user information satisfaction and information retrieval effectiveness(Tamine-Lechani, Boughanem, &Daoud, 2010; Al-Maskari, Sanderson, Clough, &Airio, 2008).Similarly, information retrieval research seems to have been silence on investigating factors capable of predicting information retrieval effectiveness (Clough, & Sanderson, 2013;Tamine-Lechani, Boughanem, &Daoud, 2010). To bridge the identified gaps,this study was designed to examine the predictive factors of information retrieval effectiveness among LIS undergraduates inUniversities in Kwara State, Nigeria.

Objectives of the Study

The aim of the study was toexamine the predictive factors of information retrieval effectiveness among LIS undergraduates inKwara State Universities. The objectives are to:

1. investigate the predictors of information retrieval effectiveness among library and information science undergraduate in Kwara State Universities.
2. identify the factors that best predicts information retrieval effectiveness among library and information science undergraduate in Kwara State Universities.
3. find out the contribution of each of the factors to information retrieval effectiveness.
4. determine problems militating against information retrieval effectiveness among library and information science undergraduate.

Research Questions

1. What is the correlation among the factors identified as predictors of information retrieval effectiveness of LIS undergraduates in Kwara State Universities?
2. Which of the factors best predict information retrieval effectiveness among library and information science undergraduate in Kwara State Universities?
3. What is the contribution of each of the factors to information retrieval effectiveness?
4. What are the problems militating against information retrieval effectiveness?

Literature Review

Ocheibi (2003) argues that information is a key resource that can bring about change and improvement in the society. User studies in library and information science are based on the premise that effective information retrieval must begin with a clear understanding of the actual needs of information users. Cambridge University Press (2009) defines information retrieval as the finding of material (usually documents) of an unstructured nature (usually text) that satisfies an information need from within large collections (usually stored on computers). The Great Soviet Encyclopaedia defines information retrieval as the process of locating in a certain set of texts (documents) all those devoted to a requested subject or that contain facts or information necessary to the user. Information retrieval is accomplished by means of an information retrieval system and is performed manually or with the use of mechanization or automation. Human beings are indispensable in information retrieval. Depending on the character of the information contained in the texts output by the information retrieval system, information retrieval can be documentary, including bibliographic, or factual. Information retrieval must be distinguished from logical information processing, without which directs reply to the questions posed by a human being is impossible. In information retrieval, only the information that is input to the information retrieval system is sought, found and retrieved.

Information retrievalhas been one of the major activities undergraduates in the universities engages. This is because they need information when carrying out research or doing assignment and also to support themselves scholarly. Information Retrieval (IR) is the automatic search for documents and information from wherever available (Julián, Mónica, Diego & Jorge 2011). IR knowledge is a clear necessity for the undergraduates to alleviate the problem of managing the ever-growing information available. However, to get relevant and useful information is dependent upon certain factors. These factors have not been revealed in most information system

research. The revelation of these factors is assumed will enhance the search and retrieval effectiveness of the undergraduate students.

Some related studies to the current study were reviewed to discover the areas that have been covered on the subject of this study and eventually justify the need for its conduct at this time. For instance, Lewandowski (2015) tested the major Web search engines on their performance on navigational queries, i.e. searches for homepages and systematically compared the major search engines on navigational queries and compared the findings with studies on the retrieval effectiveness of the engines on informational queries. The author used 100 real user queries which were posed to six search engines (Google, Yahoo, MSN, Ask, Seekport, and Exalead). Users described the desired pages, and the results position of these were recorded. Measured success numberand mean reciprocal rank were calculated. The findings revealed that performance of the major search engines Google, Yahoo, and MSN is best, with around 90 percent of queries answered correctly. Ask and Exalead perform poorly but receive good scores. The study recommended that, when designing a search engine to compete with the major search engines, care should be taken on the performance on navigational queries.

Clough and Sanderson (2013) discussed system-oriented evaluation that focuses on measuring system effectiveness: how well an information retrieval system can separate relevant from non-relevant documents for a given user query; considered the construction and use of standardized benchmarks test collections for evaluating information retrieval systems. The authors also described current and future research directions for test collection-based evaluation, including efficient gathering of relevance assessments, the relationship between system effectiveness and user utility, and evaluation across user sessions. In conclusion, the paper described test collections which had been widely used in information retrieval evaluation and provide an approach for measuring system effectiveness.

Magdy (2012) explored the recall-oriented patent search task. The study included IR system evaluation and multilingual IR for patent search. In each of these dimensions, current IR techniques were studied and novel techniques developed especially for recall-oriented IR application which was proposed and investigated experimentally in the context of patent retrieval. The techniques developed in the study provided a significant contribution toward evaluating the effectiveness of recall-oriented IR in general and particularly patent search, and improving the efficiency of multilingual search for information.

Foo (2011) evaluated the retrieval effectiveness of English-Chinese (EC) cross-language information retrieval (CLIR) on four common search engines along the dimensions of recall and precision. The author formulated a set of simple and complex queries on different topics including queries with translation ambiguity. Three independent bilingual proficient evaluators reviewed a total of 960 returned web pages each to assess document relevance. The results demonstrated that CLIR effectiveness is poor with average recall and precision values of 0.165 and 0.539 for monolingual EE/CC searches, and 0.078 and 0.282 for cross lingual CE/EC searches. Google outperformed Yahoo in the experiments, and EC and EE searches returned better results than CE and CC results respectively. The author concluded that as this was the first set CLIR retrieval effectiveness measurements reported in literature, these findings can serve as a

benchmark and provide a better understanding of the current CLIR capabilities of Web search engines. The current study is different from this Cross Language Information Retrieval capabilities because it is all about determining the predictors of information retrieval effectiveness.

Tella (2011) examined predictors of web search effectiveness among LIS undergraduate students at the University of Ilorin, Nigeria. A total enumerative sample technique was used to select the entire 115 students of the department of Library and Information Science. Through a survey approach, questionnaire was developed and used for the collection of data. Three research questions were developed to guide the study. The results demonstrated that factors such as internet and computer self-efficacy, emotional intelligence and participation in the online discussion forum significantly correlate with and predict web search effectiveness.

Malik and Mahmood (2009) explored different aspects of web search behaviour of university students, in terms of user's background and experience with web, purpose of use, searching skills, query formulation, frequency of use, favourite search engine, etc. Data was collected from students of the Faculty of Economics and Management Sciences, University of the Punjab, Lahore in Pakistan through questionnaire. Key findings revealed students used the web purely for academic tasks, preferably google, reformulation of query, use of basic and advance search features, browsing of first ten hits and problem of slow speed.

Kim (2008) investigated how users' emotion control and search tasks interact and influence the Web search behaviour and performance among experienced Web users. Sixty-seven undergraduate students with substantial Web experience participated in the study. Effects of emotion control and tasks were found significant on the search behaviour but not on the search performance. The interaction effect between emotion control and tasks on the search behaviour was also significant. Effects of users' emotion control on the search behaviour varied depending on search tasks.

Danaher, Mullarkey and Essengaier (2006) examined factors that affect Web site visit duration, including user demographics, text and graphics content, type of site, presence of functionality features, advertising content, and the number of previous visits. The authors use a random effects model to determine the impact of these factors on site duration and the number of pages viewed. The proposed method accounts for three distinct sources of heterogeneity that arise from differences among people, Websites, and visit occasions to the same Website by the same person. The model was fit using one month of user-centric panel data thatencompassed the 50 most popular sites in a market. The results showed that, in general, older people and women visit Websites for a longer period. Some surprising results revealed variation in examination of interactions between the demographics and site characteristic variables. For example, sites with higher levels of advertising usually resulted in lower visit duration, but this was not the case for older people. The model also provided insights into the relative importance of different sources of heterogeneity in visit duration; heterogeneity in visit occasions dominated individual-level and Website specific heterogeneity.

In a study by (Penhale& Taylor, 1986), 18 undergraduate biology students were assigned randomly to search one of four topics using online databases, and their results were compared with the searches of four reference librarians on the same topics. Results indicated a significant

difference in recall of relevant information between the novice and the expert searchers. Recall was defined as 'the percentage retrieved of the total relevant set, with the total relevant set defined as the number of highly or moderately relevant articles found in all the searches combined' (Penhale& Taylor 1986, p 213). This difference in recall was attributed by Penhale and Taylor to the greater number of search terms and synonyms used by the reference librarians. They concluded that 'the major problem faced by novice searchers is the development of good search strategy' (Penhale& Taylor 1986, p 215).

Sylvia and Kilman (1991) advocated a conceptual approach to bibliographic instruction to counteract the overload of information that can occur using CDROMs. They observed that after the installation of CD-ROM databases in the library at St Mary's University, Texas, student end-users were unable to use them effectively, due to lack of a conceptual understanding of the database 'information universe', how databases were organised, and how to formulate search strategies. Sylvia and Kilman observed that the CD-ROM format became a barrier to search success, as without a conceptual strategy, end-users suffered from information overload caused by simple keyword searches yielding far too many items.

Kamanda (1999) in a study conducted at the East African School of Library and Information Science, Makerere University, Uganda observed that more than half of the students experienced problems locating library information materials. The author noted that the majority of the respondents either located materials through browsing the shelves or sought assistance from library staff, but they did not make full use of the card catalogue. Sendikadiwa (1996) made similar observation at Makerere University library. The author noted that although the catalogue was the most essential library tool in accessing library collections, it was the most avoided and least consulted by undergraduates. Taylor (1991), on the other hand identified problems associated with availability and access to resources. According to the author, what a user actually needs may not tally with what is practically available, due to constraints either within the stock or due to the users own inability. Hartmann (2001) in a study concluded that undergraduate students experienced difficulty in locating items from the library collection and did not understand the processes for retrieving journal articles.

Oyesika and Oduwole (2004) in their study on the use of academic libraries discovered that majority of the users (students) do not have the requisite skills and as such shy away from the use of information technology when carrying out search and retrieval activity. Lack of user education and time for practical work on the use of information technology was among the problem of students. They advocated that credit unit should be allocated to IT courses.

From the foregoing, it is clear that most of the studies reviewed above either focused on the behaviour put up by users when engaging in search activities. Others have focused on the factors that influence website visit, comparison of results based on search activities and problems encounter in the process of searching. Limited number of these studies were conducted in Nigeria and focusing on factors that predict or determine information retrieval effectiveness. The only relevant study is the one that focus on web search effectiveness. This is different from information retrieval effectiveness and again, the study was conducted in 2011. That is six years back, and so, the results may not be relevant again and cannot be relied upon in 2017 because lots of development have taken place. Similarly, from observation, most off the undergraduate

information search and retrieval activities usually result to unsatisfaction hence, the need to conduct study that will reveal the factors that can promote undergraduate information retrieval effectiveness is germane. The study was based on information retrieval effectiveness and focused on Kwara State in Nigeria because this is the state that housed the university the researchers are working. The study focused on two universities and not one because these are the only two universities in Kwara state where Library and Information Science is being offered as a course of study. The students of this discipline are the focus of this study because of their uniqueness as information students and because information retrieval,'the subject and theme' of this study is included as part of courses embedded in the curriculum of Bachelor Degree in Library and Information Science in the two universities. This is a compulsory course the students have to pass before graduation. Involving other category of students wouldn't have yield expected results or better still distort the outcomes of the study.

Research Design

This study adopted a survey research design. This was because it is generally believe that survey enable the researcher to gathers data with the intention of describing the existing conditions, identifying standards against which existing condition can be compared to determine the relationship that exist between specific events at a particular point in time (Cohen &Manion 1994; Kothari, 2013).

Population Sample and Sampling Techniques

The population of this study consisted of LIS undergraduate students in two selected universities in Kwara State, Nigeria. The study adopted a simple random sampling technique to select the sample for the study. This is to give every respondents in the population the equal opportunity of being selected. In each University a total of twenty (40) students were randomly selected from two levels (year of study) i.e. from year 3 and 4 of the department of Library and Information Science, making a total of eighty (80) respondents from each University. This gave a total of 160 respondents which represents the sample for the study. Students from year 3 and 4 were considered because it is at these two levels the course on information retrieval is usually taken.

Description of the instruments

The instrument used for data collection in this study was a questionnaire. The questionnaire adopted a closed ended format and it was divided into five sections, A - H. Section A required the respondents bio-data information, Section B contained the items relating to respondents' information retrieval effectiveness, Section C focused on internet efficacy, Section D captured data on computer self-efficacy, Section E contained items on emotional intelligence, Section F contained items on the use of search engines, Section G featured items on the use of Boolean search operators and finally Section H obtained data on problems militating against information retrieval effectiveness.Questionnaire was chosen for data collection in this study because it is relatively easy to analyse, a large sample of the given population can be contacted at relatively low cost; simple to administer; and the format is familiar to most respondents (Kothari, 2013).

Validity and Reliability of the Instruments

The instrument was validated to ensure both the content and construct validity. To achieve these, the instrument was given to two researchers who researches on information system toscrutinize the instrument and offered expertise judgement. This was with the view of checking the appropriateness and relevance of the instrument for data collection on the study before administration. The outcomes of the exercise revealed that the questionnaire has bot the face and the contents validity. To achieve the reliability of the instrument which was used for data collection in this study, a split-half reliability method was adopted. The instrument was administered to twenty (20) students from each of the two Universities but not students from the two departments where respondents were selected. Responses collected were subjected to Cronbach alpha and the correlation coefficient yielded and r = 0.89.

Data Collection Procedure

The questionnaire was administrated when students were in session because that is the time they could be easily reached. A total of one hundred and sixty (160)copies of questionnaire were administered to students in the two institutions out of which one hundred and fifty nine (159) was properly completed and returned representing 99.4% returned rate. This was used for the data analysis on the study.

Data Analysis Techniques

The data from the field was analyzed using descriptive statistics, multiple correlation and regression method. The Descriptive statistical method was used in analysing demographic data as well as data on problems militating against information retrieval effectiveness while data that was collected on the various predictors of information retrieval effectiveness was analysed using multiple correlation and regression methods. Descriptive statistics involving percentage and frequency count were used for the demographic data because they are the most relevant to analyse data on such type of data. Similarly, multiple correlation and regression were used to analyse the predicting variables. The is because this study is a kind of causal comparative that deal with cause, effect analysis and the best data analysis method for this kind are multiple correlation and regression to be able to discover what variable(s) is capable of predicting or determining the dependent variable.

Results

Results obtained from the analyses are reported as follows:

Table 1: Demographic Information of Respondents

Demographics	**Frequency**	**Percentage%**
Gender		
Male	79	49.7
Female	80	50.3
Total	**159**	**100.0**
Age		
> 17 years	12	7.5

18-25years	102	54.2
26-30years	43	26.4
31 and above	3	1.9
Total	**159**	**100.0**
Level of Studies		
100Level	40	25.2
200Level	40	25.2
300Level	39	24.5
400level	40	25.2
Total	**159**	**100.0**

The table 1 shows the distribution of students based on their gender. 49.7% of the students are of male gender, 50.3% are of the female gender. This indicates that there are more female that male that took part in this study. The distribution of students based on their age grade indicates that 7.5% of the students were less than 18 years of age, 64.2% were between the ages of 18-25 years of age, 26.4% were between 26-30 years, and 1.9% were aged 31-40. This shows that a larger percentage of students were between the ages of 18-25 years. The distribution of students based on academic level shows that 25.2% of the students were in their first year of study, 25.2% of students were in their second year of study, 24.5% were in their third year of study and 25.2% were in their fourth year of study. This result indicates that there was equal distribution of students in this study.

Table 2: Descriptive Statistics and Intercorrelation Matrix among Factors (N=159)

			Factors (Variables)						
Factors (Variables)	Mean	Standard Deviation	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Information Retrieval Effectiveness	114.316	22.666	1.000						
(2) Internet Self-Efficacy.	13.984	2.764	.**495**	1.000					
(3) Computer Self-Efficacy	11.270	2.444	.**500**	.689	1.000				
(4)Emotional Intelligence	8.422	2.689	.377	.333	.420	1.000			
(5)Use of Search Engine	7.999	2.099	.415	**.**526	**.**555	.402	1.000		
(6) Use of Boolean Operators	9.600	2.490	**.604**	.373	.441	.370	.495	1.000	

Table 1 reveals that correlation exists between the overall Information Retrieval Effectiveness (IRE) score and the other IRE related variables. The results show that *Use of Boolean Operators* had the highest correlation with Information Retrieval Effectiveness (r = 0.60). This is followed by *Computer Self-Efficacy* (r = 0.50). A correlation of other factors reveal*Internet Self-Efficacy* as having (r = 0.49) and *Use of Search Engine* (r = 0.41), while *Emotional Intelligence* had the lowest correlation (r = 0.37). This suggests that all these factors correlate with Information Retrieval Effectiveness.

Nevertheless, the results reveal that some correlations are higher than others. Among the highest inter-correlations that are higher than 0.5 are Use of Boolean Operators (r = 0.604) and computer self-efficacy and internet self-efficacy (r = 0.689) and use of search engine with internet self-efficacy (r = 0.526). These high correlations are what should be expected, as undergraduate users are likely to link their ability in using the computer and the internet with retrieval of information online. Also, they are likely to link it with the use of search engines which made it possible for them to retrieve relevant available information online. The other similarly high inter-correlations (above 0.5) are between use of search engines and computer self-efficacy (r = 0.555).

However, some factors had much lower inter-correlations with one another: emotional intelligence with computer self-efficacy (r = 0.333), use of Boolean operators with computer self-efficacy (r = 0.373), and with emotional intelligence (r = 0.370); self-efficacy with emotional intelligence (r = 0.420), use of Boolean operators (r = 0.441), and use of search engines with emotional intelligence (r = 0.402). These results indicate that the undergraduate students' perceptions and ratings of *emotional intelligence* is low, which probably also explains why the factor is also weakly correlated with the information retrieval effectiveness factors such as computer self-efficacy and use of Boolean operators, as the table shows.

Table 3: Model Summary

Multiple R					**.223**
R. square					**.050**
Adjusted R. square					**.019**
Standard Error			**4.255**		
ANOVA					
	df	**Sum of square**	**Mean square**	**F-ration**	**Significance**
Regression	**5**	**144.602**	**28.920**	**1.598**	**.164**
Residual	**153**	**2769.759**	**18.102**		
Total	**158**	**2914.277**			

Table 3 presents the results of the regression of information retrieval effectiveness on the five related variables. The regression results show an adjusted R-square value of 0.50, and an F-ratio of 1.598, the latter of which is significant at 0.05 level (0.000 < 0.05). These results indicate that the five independent variables (*Internet self-efficacy, computer self-efficacy, emotional intelligence, use of Boolean operators and use of search engines*) jointly (as indicated by the R-

square value) explained or predicted 50% of the variations in the Information retrieval effectiveness. The prediction is also significant, as indicated by the F-ratio.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.085	2.980		4.390	.000
	Internet Self Efficacy Total Score	.049	.096	.041	.515	.607
	Computer Self Efficacy Total Score	-.071	.103	-.055	-.689	.492
	Emotional Intelligence Total Score	.253	.096	.214	2.640	.009
	Use of Search Engine Total Score	-.005	.158	-.003	-.032	.974
	Use of Boolean Search Operator Total Score	.039	.131	.026	.298	.766

Table 4: Relative Contribution of the Independent Variables to the Prediction of Dependent Variable (Information retrieval Effectiveness)

a. Dependent Variable: Information Retrieval Effectiveness

The table 4 provides a summary of the results of the multiple regression analysis to identify the contribution of each of the factors to information retrieval effectiveness of participants. The result reveals that each of the factors; Internet self-efficacy, Computer self-efficacy, Emotional Intelligence, Use of search engine, and Use of Boolean search operator contributes positively or negatively to information effectiveness. This is shown by the variation in the Value of T obtained on each of them. Internet Self-Efficacy had a positive influence or contribution to information retrieval effectiveness (Beta = .041; t = .515). Computer Self-Efficacy had a negative contribution to students' information retrieval effectiveness (Beta = -.055; t = -.689). Emotional intelligence had the most significant influence or contribution in predicting students' information retrieval effectiveness (Beta = .214; t = 2.640). Use of Search Engine had the least negative contribution to information retrieval effectiveness of participants (Beta = -.003; t = -.032) and Use of Boolean Search Operator had the least positive Contribution to information retrieval effectiveness of participants (Beta = .026; t = .298). This provides answerto research question three.

Table 5:Problems Militating Against Information Retrieval Effectiveness

Variables	Frequency Yes	Percentage Yes	Frequency No	Percentage No
Lack of skill required to use the computer	20	12.6	139	87.4
Do not know how to use the internet	11	6.9	148	93.1
Do not know how to search for information	19	11.9	140	88.1
Lack of time	63	39.6	96	60.4
Cost	89	56.0	70	44.0
Complicated materials (filtering)	66	41.5	93	58.5
Do know how to use library search tools	58	36.5	101	63.5
Lack of access to databases	66	41.5	93	58.5
Do not know how to formulate search queries	24	15.1	135	84.9

The respondents were asked to indicate the problems they encounter that hinder effective retrieval of information online. The results show that 12.6% of the students had the problem of inadequate necessary skill required to use the computer, 6.9% indicated inadequate knowledge of using the internet, 11.9% identified inadequate search skills, 39.6% identified inadequate time to conduct information search, 56% identified high cost of retrieving information, 41.5% indicated complicated materials in terms of information filtering, 36.5% indicatedinadequate knowledge of using search tools available in the library, 41.5% identified restricted access to some specific

information databases, while 15.1% identified inadequate knowledge to formulate search queries.

Discussion of Findings

The broad purpose of this study was to investigate the predictors of information retrieval effectiveness. The specific purposes of this study were to identify the factor that best predicts information retrieval effectiveness among library and information science undergraduate in Kwara State Universities, find out the contribution of each of the factor to information retrieval effectiveness, and to determine problems militating against information retrieval effectiveness. The result showed that factors such as; internet self-efficacy, computer self-efficacy, emotional intelligence, use of search engines and use of Boolean operators all predicts information retrieval.

The first resultin the study reveals that all the four factors jointly predict information retreval effectiveness with computer self-efficacy having the most significant contribution while at the same time, all the factors were good predictors of information retrieval effectiveness. The finding by Tella (2011) that computer and internet self-efficacy, emotional intelligence and participation in the online discussion forum significantly correlate with web search effectiveness lend credence to the current finding in this study. These two studies are somewhat related, hence the results are similar. This similarity might be as a result of the fact that the study were conducted in the same environment, the same context using similar respondents. Similarly, web search effectiveness is related to information retrieval effectiveness because the former is a sine-qua-non to the later.

In this research, computer self-efficacy was found to be the best predictorof information retrieval effectiveness of students.Similar findings were reported by Papasratorn and Wangpipatwong, (2006) that computer self-efficacy and computer attitude were important determinants of outcomes. Therefore; students with low computer self-efficacy may feel uncomfortable, thereby affecting the expected outcomes. However, the outcome in this study contradicts Kim's (2006) study who reported the interaction effect between emotion control and tasks on the search behaviour. The effects of users' emotion control on the search behaviour which was varied based on search tasks significantly contradicts the present result. Boverie, et al (1998) also found something similar by reporting that; students became more computer self-efficacious, the more satisfied they were with an online information retrieval. There is no doubt, the fact that, self-efficacy is a predictor of effective action. No wonder that being computer efficacious resulted to information retrieval effectiveness in this study. It is assumed that an undergraduate who is self-efficacious in information retrieval will use the efficacy skill he has to manipulate, manoeuvre and apply different methods and his information retrieval skills and formula to make his search and retrieval effective. On this note therefore, this result is unexpected.

Result of this research shows that factors affecting respondents information retrieval effectiveness ranges from Lack of access to some specific information databases, not knowing how to use search tools available in the library, complicated materials, high cost of retrieving information, not having time to conduct information search, not knowing how to search for

information and others. In similar vein, Kim and Sin (2007)had earlier identified several factors hindering undergraduates' information source selection, such as accessibility, ease of use, comprehensiveness, and efficiency. Kamanda (1999)also identified problems such as locating library information materials emphasising that majority of respondents either located materials through browsing the shelves or sought assistance from library staff. The report by Oyesika and Oduwole (2004) which indicated lack of user education and time for practical work on the use of information technology also buttressed the finding on the problems hindering information retrieval effectiveness reported in the current study. There are always antecedents that either hinder or promote information retrieval effectiveness. These are refers to as problems in this study and center mostly on the factors identified in this study and those reported in the literature. However, the problems or the hindrances may be residence on the person retrieving the information, the sources where the information is retrieved or the process embark upon to retrieve the information. If all of these are affected, definitely effectiveness will be hampered.

Conclusions

The findings of the study have proved that there is a degree of influence on factors such as; internet self-efficacy, computer self-efficacy, emotional intelligence, use of search engines and use of Boolean search operators on information retrieval effectiveness. The effectiveness of a student's information retrieval whose emotional intelligence is high cannot be totally compared to the effectiveness of a student's whose emotional intelligence is average or low. Also the effectiveness of a student's information retrieval who is internet self-efficacious with the understanding of the use of Boolean search operators in retrieving information cannot be compared to a students whose internet self-efficacy and knowledge on the use of Boolean search operators is at average or low.

Recommendations

This study has demonstrates that factors such as internet self-efficacy, emotional intelligence and use of Boolean search operators significantly correlate with and is capable of predicting information retrieval effectiveness. In the light of this, this study recommends that;

1. Library and Information Science students need to be more Computer self-efficacious so that their information retrieval activities will always be effective. They can engage themselves in self-efficacy training. Moreover, enrolling for computer training can also go a long way to enhance and facilitate their information retrieval activities.
2. Retrieval activities usually result to the development of high emotion. Therefore, there is need for the students to control this. They are expected to apply their intelligence in order to put their emotion under control. Not finding or able to locate and retrieve the relevant needed information can result to stress and make the searcher becoming emotionally laden.
3. Library schools should endeavour to consider adding practical courses that would help students function at a higher level of using search engines and which would ultimately improve their information retrieval performance.

Suggestion for further research

This study has been able to showcase the predictors of information retrieval effectiveness and their contribution to information retrieval. Future research needs to examine the relationship between emotional intelligence, and other individual level variables such as domain knowledge of subject that might have an important effect on information retrieval effectiveness. Future research should strive to develop a specific emotional intelligence measure that can successfully predict information retrieval effectiveness.

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Appendix

Questionnaire

PREDICTORS OF INFORMATION RETRIEVAL EFFECTIVENESS QUESTIONNAIRE

Dear Respondent,

The researcher is an undergraduate student of university of Ilorin, Ilorin kwara state currently carrying out a research work on predictors of information retrieval effectiveness among LIS Undergraduate in Kwara State Universities, you are therefore requested to respond to all the items here in honesty. All your responses will be treated with confidence.

Note: Please tick as appropriate. **SA** (Strongly Agree), **A** (Agree), **NS** (Not Sure), **SD** (Strongly Disagree), **D** (Disagree)

SECTION A

(Personal Data)

1. Gender ☐ male ☐ female

2. Age a) less than 18, ☐) 18-25, ☐ 25-30, ☐) 30-40, ☐

3. Level a) 100☐ b) 200☐ c) 300☐ d) 400☐

SECTION B

S/N	Information Retrieval effectiveness	SA	A	NS	D	SD
1	Most often, I am generally satisfied with the information retrieved from the web search activity					
2	I know how to search databases for information materials					
3	I pre-formulate search queries prior to my information search					
4	The use of thesaurus is helpful for me to find other terms					
5	The thesauri used by information retrieval systems usually help me in the search process					

SECTION C

S/N	Internet Self efficacy	SA	A	NS	D	SD
1	I have access to the internet when needed					
2	I can search information on the internet by using key words					
3	I rarely have problems finding what I am looking for on the internet					
4	I have the necessary skills to conduct information search and retrieval effectively using the internet					
5	I wouldn't have any problems downloading relevant information for solving assignment problems					

SECTION D

S/N	Computer self-efficacy	SA	A	NS	D	SD
1	I know how to use computer in searching for information					
2	I find working with the computer very easy					
3	I am very unsure of my abilities to use the computer					
4	Computer frightens me					
5	I know how to use computer applications and software's relevant to information search					

SECTION E

S/N	Emotional Intelligence	SA	A	NS	D	SD
1	Expressing my emotions with words is not a problem for me					
2	I feel comfortable conducting information search activities when am alone					

3	I often find it difficult to see things from another person's viewpoint					
4	My emotions doesn't affect my information search and retrieval					
5	I often find it difficult to show my affection to those close to me					

SECTION F

S/N	Use of Search Engines	SA	A	NS	D	SD
1	Using search engine usually enhance my online information retrieval					
2	My ignorance of available search engines usually affect my information search					
3	I am not search engine friendly					

SECTION G

S/N	Use of Boolean Search Operators	SA	A	NS	D	SD
1	Boolean search operators usually aids information search					
2	Using Boolean operators, search engine usually result to downloading specific relevant information					
3	With Boolean operators, information search could either be broadened or narrower					

SECTION H
PROBLEMS MILITATING AGAINST INFORMATION RETRIEVAL EFFECTIVENESS

1. I do not have necessary skill required to use the computer [ ]
2. I do not know how to use the internet [ ]
3. I do not know how to search for information [ ]
4. I do not have time to conduct information search [ ]
5. High cost of retrieving information [ ]

6. Complicated materials [ ]
7. I don’t know how to use search tools available in the library [ ]
8. Lack of access to some specific information databases [ ]
9. I do not know how to formulate search queries [ ]